Connecting our Schools to the Information Superhighway:
JPL Efforts and the National Information Infrastructure

Insights from the January 30, 1996
U.S. Advisory Council's Report to the
President of the United States (As it pertains to Education)

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U.S. Advisory Council for
the National Information Infrastructure (NII)

History of Council

- Presidential Order - Jan. 1994

- Two year undertaking to develop NII Strategy

- Members were accomplished telecom individuals from broad spectrum

Recommendations in five areas

- Universal Access and Services

- Education and Life Long Learning

- Electronic Commerce

- Privacy and Security

- Intellectual Property

Council presented it's findings and policy recommendations to the President, Vice President and Secretary of Commerce in three reports.

- A Nation of Opportunity - Realizing the Promise of the Information Superhighway

- The KickStart Initiative - Connecting America's Communities to the Information Superhighway

- Connecting K-12 Schools to the Information Superhighway

(McKinsey & Company Report prepared for the U.S. Advisory Council)

"the value of hardware and network connections hinges on the quality of the courseware and the teachers' ability to integrate into the curriculum."

"committed leadership will be critical at the local, state and national levels to provide direction and sustain momentum"

* *Note: Council Documents are available at http://www.niiac-info.org/~niiac*

NII OFFERS ACCESS TO INFORMATION, SERVICES, AND PEOPLE

- Up to the minute news reports

- Electronic libraries of government documents

- Electronic bulletin boards for debates of educational issues

- Multimedia "edutainment" products

- On-line encyclopedias

- National Geographic's kids Network

- Access from home to school for after hours work

Access to a broad spectrum of Human Resources

- Teachers at other schools and colleges

- Experts from museums, libraries, archives and research institutes

- Other students from around the world

POTENTIAL BENEFITS ARE SIGNIFICANT

- By the year 2000, as much as 60% of American jobs may require such technology skills

- Provides easier, faster and more efficient access to courseware and enhances computer assisted instruction

- 254 controlled studies concluded appropriate use of technologies reduced time needed to master certain types of knowledge by 30%

- Supports new teaching methods that emphasize critical thinking and investigative skills

OPTIONS ARE AVAILABLE TODAY -- AND AFFORDABLE

(More is required than just connecting to the NII or internet)

- Local area networks to link computers, video equipment, and other hardware

- Electronic content in the form of multimedia courseware

- Educational video programs

- On-line services

- Professional development programs for teachers and other school professionals

- Ongoing technical support

Few K-12 schools have assembled all required elements of a technology infrastructure

- While 50% of schools have LANs, less than 10% connect all classrooms, most are administrative

- Only 12% of classrooms have telephones

- Cost of connecting a computer lab with 25 workstations to the NII in every K-12 school by the year 2000 would consume 1.5% of the currently projected education budget for 2000.

- Current K-12 spending on technology as a benchmark is 1.3%, but is not evenly distributed throughout all schools.

THREE CHALLENGES MUST BE ADDRESSED

1) FUNDING

- Numerous pressures are squeezing education budget at national, state and local levels

- Many schools have experimented with technology i lim ited way, others have yet o launch or identify funding for ei first experiments

- Should be possible to eet funding cha lenge throug a combination of cost reductions, reprogramming existing funds and additiona nitiatives from the public and private sectors.

- nnovative schools have secured funding through partnerships with corporations and community organizations

2) DEVELOPMENT OPPORTUNITIES FOR TEACHERS AND OTHER SCHOOL PROFESSIONALS

- 50% of teachers have no computer experience

- Currently little incentive to motivate teachers to build and apply technology skills

3) BROAD ASSORTMENT OF HIGH QUALITY COURSEWARE

- Widespread commitment to connect to NII would accelerate growth of high quality courseware

- Slow and cumbersome public school budgeting and procurement processes make it difficult for courseware developers to enter public school market

Connecting public K-12 schools will take time and leadership

Each school must make commitment and decisions on:

- How much technology to deploy (one lab - every classroom - every desktop?)

- How fast - lab level connection by 2000 - build out by 2005

- Identify adequate funding both for installing technology and support

- Teachers will need the opportunity, incentive and support to experiment, master, and learn to adopt and adapt information technology as a basic teaching tool.

In each school and district, it will be necessary for local leaders to communicate a compelling vision, set clear goals and generate enthusiasm for connectivity.

Deployment must be "bottom-up" to gain commitment of teachers, principals, school boards, parents and other community members.

Schools will need help in marshaling resources and moving forward. Strong leadership has proven to be a key success factor.

JPL Efforts and the NIE: NASA/JPL Alignment with National Education Goals

Teacher Prep Program ("TIP")

"develop, expand, and support an ever-growing community of instructional leaders in science education for urban schools in the greater Los Angeles area."

PURPOSE OF TIP:

- Response to need for long-term and coherent professional development in K-12 science education

- Implement the NASA Strategic Plan for Education

  Teacher and Faculty enhancement

  Effective use of modern technologies in science education

- Establish a long-term partnership between NASA/JPL, urban school districts, and local institutions of higher education involved in teacher credentialing

OBJECTIVES OF TIP:

Provide attractive opportunities for teachers to:

- Learn how modern technologies can be used to embed an element of discovery within the classroom

- Acquire leadership training and experiences to become facilitators, planners, and consultants for science education

- Incorporate investigation and inquiry into curricula using national and state guidelines

- Increase participation of historically-underrepresented teachers in urban schools

- Develop a long term follow-up program to keep past and current interns abreast of recent discoveries

CONCLUSION

"The United States stands today in the midst of one of the great revolutions in recorded history: the Information Age. The National Information Infrastructure provides enormous benefits in education, economic well-being, and quality of life."

Jan. 1996 - US Advisory Council

The effective use of the information infrastructure and technology in education will, as in no previous time, open up the process of discovery.